
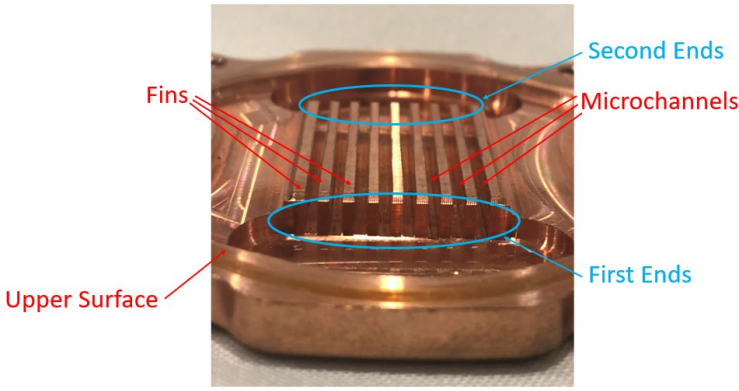

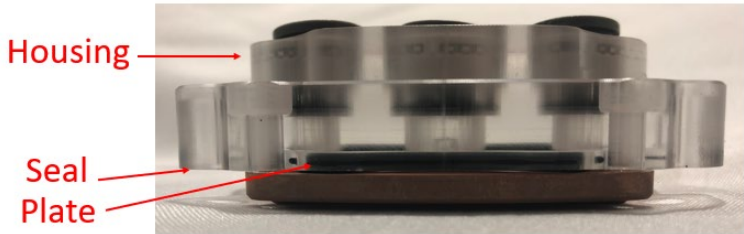


# EXHIBIT 4

**EXHIBIT D-13**  
**Invalidity Claim Chart for U.S. Patent No. 10,274,266**  
 Asetek Danmark A/S v. CoolIT Systems, Inc.  
 Northern District of California, Case No. 3:19-CV-00410 EMC

The '266 Patent	Anticipated by <i>Antarctica</i> or obvious in view of <i>Antarctica</i> with or without <i>Satou</i>
Claim 13	
<p>[13.0] A fluid heat exchanger for cooling an electronic device, the heat exchanger comprising:</p>	<p>The <i>Antarctica</i> device is a fluid heat exchanger for cooling an electronic device.</p>  <p>The top image shows the WaterChill Antarctica CPU/VGA/Chipset Power water cooling kit components, including a pump, reservoir, and fans. The bottom image is a close-up of the copper heat exchanger, showing its internal structure and mounting points.</p>
<p>[13.1] a plurality of walls defining a corresponding plurality of microchannels, wherein each microchannel extends from a first end to a second end;</p>	<p>The <i>Antarctica</i> device has a plurality of walls defining a corresponding plurality of microchannels, wherein each microchannel extends from a first end to a second end.</p>  <p>The bottom image is a close-up of the copper heat exchanger with labels: 'Fins' (red), 'Upper Surface' (red), 'Second Ends' (blue), 'Microchannels' (red), and 'First Ends' (blue). The labels point to the internal structure of the heat exchanger, showing the microchannels and fins.</p>

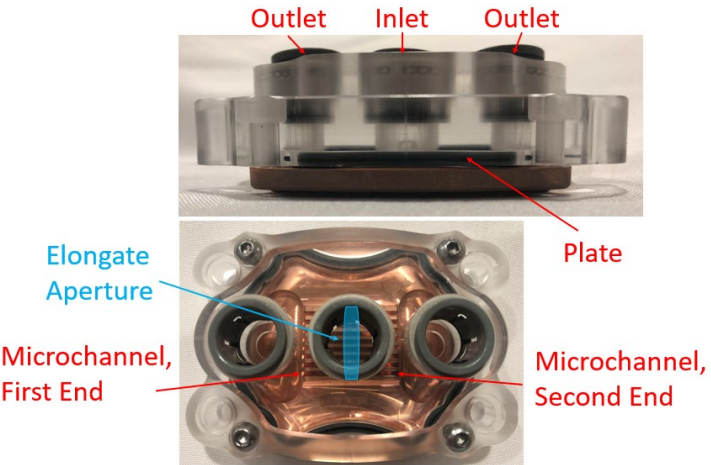
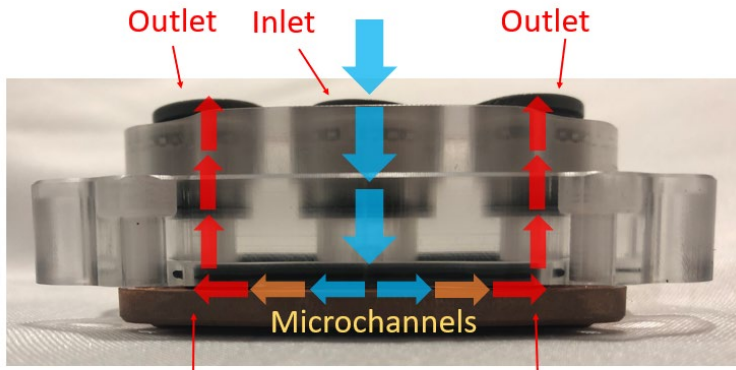
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[13.2] a plate overlying the walls; and	<p>The <i>Antarctica</i> device has a plate overlying the walls.</p> 
[13.3] a seal, wherein the seal is a portion of the plate;	<p>The <i>Antarctica</i> device has a seal that is a portion of the plate.</p>  <p>The housing and the plate in <i>Antarctica</i> are connected to create a seal therebetween. If they were not connected, it also would have been obvious to provide a gasket between the plate and the housing to seal the inlet and outlet openings and prevent short-circuiting of the fluid.</p>
[13.4] a fluid inlet passage configured to deliver a heat-exchange fluid through one aperture in the plate to each microchannel at a position between the corresponding first end and the corresponding second end of the respective microchannel;	<p>The <i>Antarctica</i> device has a fluid inlet passage configured to deliver a heat-exchange fluid through one aperture in the plate to each microchannel at a position between the corresponding first end and the corresponding second end of the respective microchannel.</p>

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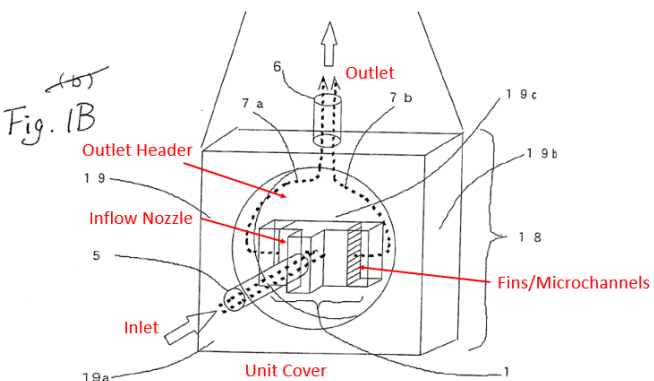
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<p>[13.5] a fluid outlet passage configured to receive the heat-exchange fluid from the first end and the second end of each microchannel, wherein the fluid outlet passage has a first outlet region positioned adjacent the microchannel first ends and a second outlet region positioned adjacent the microchannel second ends, wherein the seal separates the fluid inlet passage from the fluid outlet passage;</p>	<p>The <i>Antarctica</i> device has fluid outlet passages configured to receive the heat-exchange fluid from the first end and the second end of each microchannel, wherein the fluid outlet passages have a first outlet region positioned adjacent the microchannel first ends and a second outlet region positioned adjacent the microchannel second ends, wherein the seal separates the fluid inlet passage from the fluid outlet passage.</p>  <p>Although the <i>Antarctica</i> water block has two outlet ports, because there was only a single input port in the radiator, the two output ports would have been merged into a single output tube. Moreover, combining the cooling fluid from the first and second output regions into a single outlet</p>

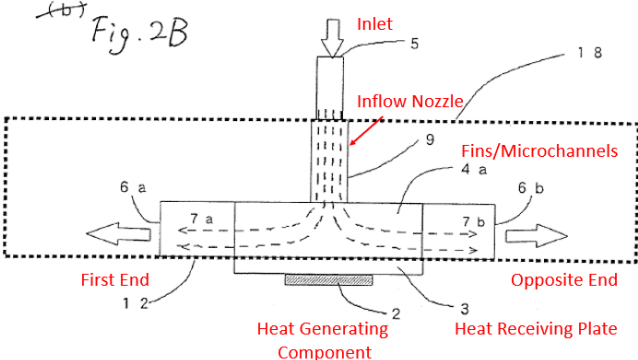
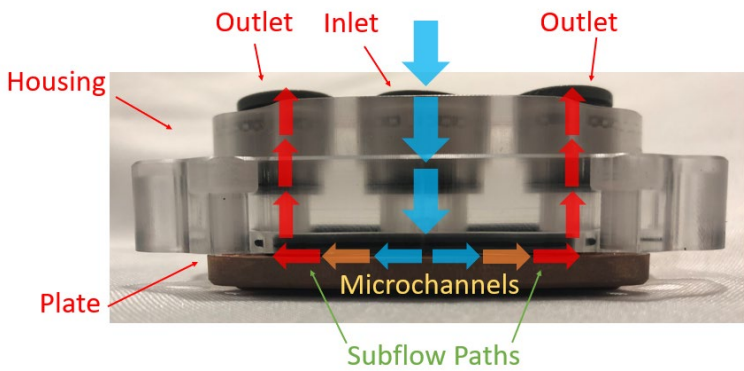
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The '266 Patent	Anticipated by <i>Antarctica</i> or obvious in view of <i>Antarctica</i> with or without <i>Satou</i>
	<p>passage would have been necessary to form a complete loop, and thus would have been obvious.</p> <p>To the extent CoolIT contends that the <i>Antarctica</i> does not have this claim element, such structure would have been obvious in view of <i>Satou</i>. Based on the <i>Antarctica</i> device in combination with the teachings of <i>Satou</i>, it would have been obvious for a person of ordinary skill in the art to modify the <i>Antarctica</i> device to have an outlet passage structure like that in <i>Satou</i>. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. <i>KSR International Co. v. Teleflex Inc.</i>, 127 S.Ct. 1727, 1740-1741 (2007).</p> <p>The device in <i>Satou</i> has a fluid outlet passage configured to receive the heat-exchange fluid from the first end and the second end of each microchannel, wherein the fluid outlet passage has a first outlet region positioned adjacent the microchannel first ends and a second outlet region positioned adjacent the microchannel second ends, wherein the seal separates the fluid inlet passage from the fluid outlet passage. <i>See</i> FIGS. 1, 2.</p>  <p>Fig. 1B</p> <p>Outlet Header</p> <p>19</p> <p>Inflow Nozzle</p> <p>5</p> <p>Inlet</p> <p>19a</p> <p>Unit Cover</p> <p>1</p> <p>18</p> <p>Fins/Microchannels</p> <p>7a</p> <p>7b</p> <p>6</p> <p>Outlet</p> <p>19b</p> <p>19c</p>

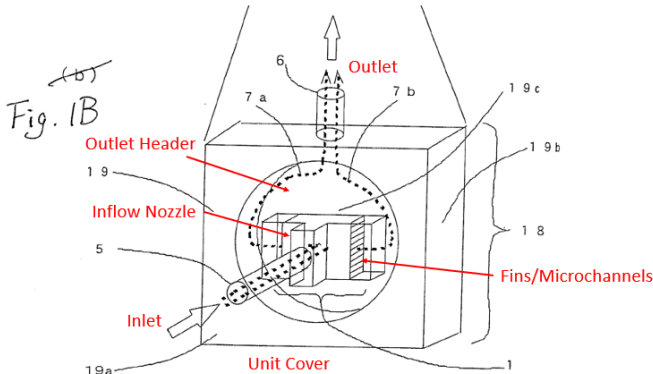
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<p>[13.6] wherein a flow of the heat-exchange fluid through the one aperture in the plate bifurcates into two sub flows within each microchannel, wherein the first outlet region receives one of the two sub flows adjacent the microchannel first ends and the second outlet region receives the other of the two sub flows adjacent the microchannel second ends, wherein the two sub flows recombine in the outlet passage.</p>	<p>In the <i>Antarctica</i> device, the flow of the heat-exchange fluid through the one aperture in the plate bifurcates into two sub flows within each microchannel, wherein the first outlet region receives one of the two sub flows adjacent the microchannel first ends and the second outlet region receives the other of the two sub flows adjacent the microchannel second ends, wherein the two sub flows recombine in the outlet passage.</p>  <p>Although the <i>Antarctica</i> water block has two outlet ports, because there was only a single input port in the radiator, the two output ports would have been merged into a single output tube. Moreover, combining the cooling fluid from the first and second output regions into a single outlet passage would have been necessary to form a complete loop, and thus would have been obvious.</p>

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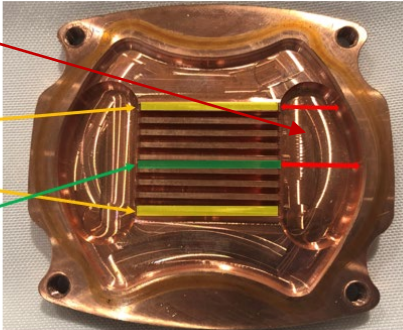
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	<p>To the extent CoolIT contends that the <i>Antarctica</i> does not have this claim element, such structure would have been obvious in view of <i>Satou</i>. Based on the <i>Antarctica</i> device in combination with the teachings of <i>Satou</i>, it would have been obvious for a person of ordinary skill in the art to modify the <i>Antarctica</i> device to have an outlet passage structure like that in <i>Satou</i>. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. <i>KSR International Co. v. Teleflex Inc.</i>, 127 S.Ct. 1727, 1740-1741 (2007).</p> <p>The device in <i>Satou</i> has a fluid outlet passage configured to receive the heat-exchange fluid from the first end and the second end of each microchannel, wherein the fluid outlet passage has a first outlet region positioned adjacent the microchannel first ends and a second outlet region positioned adjacent the microchannel second ends, wherein the seal separates the fluid inlet passage from the fluid outlet passage. See FIGS. 1, 2.</p>  <p>Fig. 1B</p>

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<b>Claim 14</b>	
<p>[14.0] The fluid heat exchanger according to claim 12, wherein the plurality of microchannels comprises at least two opposed outer microchannels and a centrally located microchannel positioned between the opposed outer microchannels, wherein the first outlet region is smaller adjacent at least one of the outer microchannels relative to adjacent the centrally located microchannel.</p>	<p>The <i>Antarctica</i> device has a plurality of microchannels comprising at least two opposed outer microchannels and a centrally located microchannel positioned between the opposed outer microchannels, wherein the first outlet region is smaller adjacent at least one of the outer microchannels relative to adjacent the centrally located microchannel.</p> <div data-bbox="662 768 1398 1108">  <p>First Outlet Region</p> <p>Opposed Outer Microchannels</p> <p>Central Microchannel</p> </div>
<b>Claim 15</b>	
<p>[15.0] The fluid heat exchanger according to claim 12, wherein the plurality of microchannels comprises at least two opposed outer microchannels and a centrally located microchannel positioned between the opposed outer microchannels, wherein the first outlet region comprises an outlet opening from each microchannel, wherein the outlet opening from the centrally located microchannel is larger than the</p>	<p>See claim 14, above. The first outlet region comprises an outlet opening from each microchannel, wherein the outlet opening from the centrally located microchannel is larger than the outlet opening from at least one of the outer microchannels.</p>

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outlet opening from at least one of the outer microchannels.	